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STATEMENT BEFORE USDOE ON THE EIS FOR THE PROPOSED  
YUCCA MOUNTAIN NUCLEAR WASTE REPOSITORY

Lakeside Holiday Inn Cleveland, Ohio

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My name is Edward Fritz. I am a Chemical Engineer and have studied the nuclear waste disposal problem since 1970.

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I wish I could endorse and support the Yucca Flats project. The United States and the World needs a viable method for storage and permanent disposal of high-level nuclear waste. However I cannot endorse this project for reasons that I will get to in a moment.

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First let me say that I have gotten into arguments with other anti-nuclear people about my position on this matter. They say: "What do you propose to do with the wastes, what alternatives do you have?" My answer is that I do not have any alternatives except that we should stop producing the wastes. This of course means a total and immediate world-wide ban on nuclear power generation.

1 cont.

The concept of underground storage presumes that high-level wastes generate relatively small amounts of heat that can be dissipated in the rock. On the contrary, heat generation is sufficiently large and prolonged that heat must be continuously transferred to the environment in order to keep the wastes immobile.

Assume that spent fuel is allowed to decay in storage pools for 30 years after removal from the reactor. By this time 98% of the remaining radioactive decay and heat generation is accounted for by two isotopes, strontium-90 and cesium-

137. It can be calculated that the heat generation from 15,000 metric tons of spent fuel (the present U.S. inventory) is approximately 19,000 kW. One hundred seventy years later (200 years after removal from the reactor) the wastes will generate 300 kW of heat.

These heat generation rates can be compared with the normal heat flow from Earth of approximately 0.215 kW per acre. This heat is transferred to the surface with a temperature gradient of about 9 °C per thousand feet. Assume that the waste canisters are distributed under 1000 acres of the Yucca Mountain repository. This gives an initial heat flow of 19 kW per acre, which is 90 times normal heat flow. In theory, the waste-containing strata will rise in temperature until long-term equilibrium is reached and heat generation equals heat flow to the surface. In practice, the wastes will soon reach melting and volatilization temperatures and begin to migrate from the repository depths. Groundwater that comes into contact with the molten wastes will form steam, which will speed up waste migration.

These calculations, which I made from information in published government and nuclear industry sources, help explain why repeated attempts to plan and build underground high-level radioactive waste repositories have come to naught. I predict Yucca Mountain will be another exercise in futility, and the ever-increasing waste inventory will continue to burden our future.

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